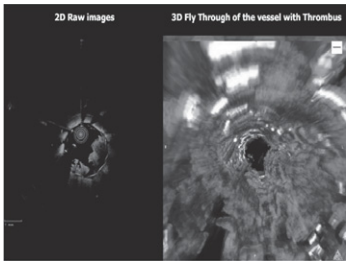
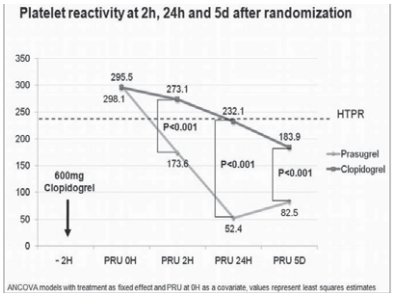
after stenting assessed by Optical frequency domain tomography imaging (OFDI, TERUMO Corporation, Tokyo, Japan) between the 2 treatment arms. Flow area is defined as: (Stent area + incomplete stent apposition area) – (intraluminal defect area attached to the wall + intraluminal defect area free from the wall). The sample size of 60 patients in each group would achieve 80% power to detect a difference of 0.72 mm2 in minimal flow area.
Results: As of July 31, 109 patients were enrolled. 72% of the enrolled patients were male, 43% had current smoking habit, and 5% had diabetes mellitus. Treated vessels were RCA in 35%, LCx in 14% and LAD in 41%. 23% of the patients were treated using radial access. In some cases, OFDI documented a presence of significant amount of intraluminal mass (Figure). The interim, blinded OFDI analysis of the first 62 patients showed the minimal flow area of 7.08±1.98 mm2 and mean flow area of 8.67±2.17 mm2.
Conclusion: The results of primary endpoint, the complete and unblinded OFDI analysis of minimal flow area in the two groups will be presented at the meeting.



Prasugrel Versus Double Clopidogrel to Overcome Platelet Reactivity Early Following a 600mg Clopidogrel Loading Dose In Patients Undergoing Primary Percutaneous Coronary Intervention.

Dimitrios Alexopoulos, Ioanna Xanthopoulou, Konstantinos Theodoropoulos, Georgios Kassimis, Ioannis Chiladakis, Periklis Davlouros, George Hahalis
Background: Platelet reactivity (PR) assessment in the very early phase (2 hours post 600mg clopidogrel loading dose-LD) of ST-elevation myocardial infarction (STEMI) has not been previously reported nor any possible ways to overcome high on-treatment PR (HTPR).
Methods: In STEMI patients undergoing primary PCI, PR was assessed with the VerifyNow (Accumetrics Inc., San Diego, CA, USA) assay 2 hours after a 600mg clopidogrel LD. Patients with HTPR (≥ 235 PR Units), were randomized to either immediate reloading with 60mg prasugrel/10mg maintenance dose (MD) (group-A) or clopidogrel 150mg MD starting from the next day (group-B). PR was re-assessed at 2, 24 hours and at 5 days following randomization. Genotyping was performed for CYP2C19*2 carriage.
Results: Out of 81 STEMI patients screened, 52(64.2%) demonstrated HTPR 2 hours post LD and were all randomized (26 group-A and 26 group-B). PR at 2 hours, 24 hours and 5 days post randomization was lower in group- A compared to group-B (Figure 1). HTPR rates were lower for group-A compared to group-B at 2 and 24 hours post randomization (44.0% vs 76.9%, p=0.023 and 3.8% vs 61.5%, p<0.001 respectively) and marginally lower at 5 days post randomization (8.0% vs 30.8%, p=0.075). HTPR rates were affected by CYP2C19*2 carriage mainly in group-B.
Conclusion: In STEMI patients, HTPR 2 hours following 600 mg of clopidogrel LD is very common. An additional reloading with 60 mg of prasugrel followed by a 10 mg MD, achieves greater platelet inhibition compared to clopidogrel 150 mg MD as early as in 2 hours, a difference that is maintained up to 5 days. Complete genotyping analysis will be presented. Platelet reacticity at 2, 24 hours and 5 days post randomization.



The Evaluation of the Influence of Statins and Proton Pump Inhibitors on Clopidogrel Antiplatelet Effect (SPICE) Trial

Jean-Pierre P. Dery, Ugo Déry, Stephane Rinfret, Eric Larose, Josep Rodes-Cabau, Robert DeLarochellière, Mélanie Roy, Pierre-Louis Nadeau, Rodrigo Bagur, Helena Tizon-Marcos, Louis Roy, Can M. Nguyen, Gerald Barbeau, Guy Proulx, Onil Gleeton, Bernard Noel, Olivier F. Bertrand
Background: Previous pharmacodynamic studies have demonstrated that proton pump inhibitors (PPI) and statins may interfere with the antiplatelet effect of clopidogrel.
Methods: SPICE was a single center prospective randomized open-label with blinded endpoints trial. The primary objective was to compare the impact of 4 different anti-acid therapies on the antiplatelet effect of clopidogrel. The secondary objective was to determine which factors modulate this drug-drug interaction, including the choice of statin and the presence of 2C19*2 polymorphism. After PCI, 320 patients were randomized to rosuvastatin 20mg id or atorvastatin 80mg id. At 30 days, patients were randomized again to either omeprazole 20mg id, pantoprazole 40mg id, esomeprazole 40mg id, or ranitidine 300mg id, stratified by statin group and 2C19*2 carrier state. Platelet function tests were performed before and after 30 days of constant anti-acid therapy. The study had 87% power to detect an absolute difference of 10% in the mean change in maximal platelet aggregation (MPA) between two anti-acid groups in the stratum of patients carrying the 2C19*2 polymorphism.
Results: As of August 1st, 319 patients have been recruited. Median age was 61 years. Reason for PCI was ACS for 71% of patients. Thirty-day and 60-day platelet function tests were available for 274 and 243 patients, respectively. After 30 days of anti-acid therapy, MPA increased from 38.6% to 39.2% (p=0.8) in the ranitidine group and from 35.1% to 40.5% (p=0.0004) in the PPI groups combined. Similarly, platelet reactivity index (VASP) increased from 44.9% to 47% (p=0.6) in ranitidine-treated patients and from 42.8% to 49.6% p<0.0001) in PPI-treated patients.
Conclusion: In patients receiving clopidogrel after PCI, concomitant anti-acid therapy with proton-pump inhibitors decreased the antiplatelet effect of clopidogrel while the H2 receptor blocker ranitidine had no impact on platelet reactivity. The differential effect of each PPI and the role of the choice of statin and 2C19*2 polymorphism on this drug-drug interaction will be presented at the meeting.

Vasoreactivity Results of Cohort 1 at Six Month Post Implantation of the Drug Eluting Absorbable Metal Scaffold in the BIOSOLVE-I Study

Raimund Erbel, Dirk Böse, Michael Haude, Hubertus Degen, Stefan Verheye, Paul Vermeersch, Paul Erne, Ron Waksman, Jacques Koolen
Background: Absorbable metal scaffolds (AMS) were developed for the treatment of coronary artery stenosis. The major advantages of AMS after bioabsorption, are that they only leave behind the natural healed vessel within 6 -12 months post implantation. Most recently a new drug (Paclitaxel) eluting AMS (DREAMS) was developed to reduce the revascularization rates. The aim of this substudy was to evaluate the restoration of vasoreactivity 6 months post implantation.
Methods: BIOSOLVE-I is a prospective, multicenter first in man trial for the evaluation of DREAMS in the treatment of coronary stenosis with follow-up investigations at 1, 6, 12, 24 and 36 months. Vasomotion test was performed at a subgroup of the patients during 6 month follow-up at two study sites. Endothelium dependent vasoactive agent acetylcholine (ACH) was administered intracoronary in different doses (0.36 µg/mL, 3.6 µg/ml and 18 µg/mL) in order to evaluate vasoreactivity during follow-up. Quantitative coronary angiography was done to assess coronary dimensions during vasomotion testing.
Results: Vasomotion test was performed in 14 patients (11 males/3 females) of cohort 1 with a mean age of 65.6 ± 10.0 years. Hypertension (92.9%), hyperlipidemia (85.7%), were the major cardiovascular risk factors and history of myocardial infarction was present in 42.9% of the subjects. Type A (50.0%), Type B1 (42.9%) and Type B2 (7.1%) lesions were treated with a 3.25 / 16mm (50.0%) or a 3.5 / 16mm (50.0%) DREAMS. During 6 month follow-up the mean lumen diameter was 2.55 ± 0.8mm in the treated segment and 2.64 ± 0.96mm and 2.40 ± 0.66mm in the proximal and distal reference segment. After infusion of ACH, the lumen dimensions decreased to 2.25 ± 0.9mm in the treated segment and 2.42 ± 0.95mm and 2.08 ± 0.82mm in the reference segments.
Conclusion: Coronary arteries undergoing DREAMS implantation regains vasomotor function at the treated segment at 6 months as reflected by vasoconstriction of the scaffold segment. These observations support scaffolding bioabsorption with restoration of vessel vasoreacitivity.

Comparison of Resolute Zotarolimus-Eluting Stent and Sirolimus-Eluting Stents in Patients with Long Coronary Artery Lesions: A Randomized LONG-DES IV Trial

Young-Hak Kim, Duk-Woo Park, Won-Jang Kim, Jong-Young Lee, Soo-Jin Kang, Seung-Whan Lee, Cheol-Whan Lee, Seong-Wook Park, Sung Yun Lee, Bong Ki Lee , Jang-Hyun Cho, Tae-Hyun Yang, Nae-Hee Lee, Joo-Young Yang, Jong-Seon Park, Won-Yong Shin, Moo Hyun Kim, Jang Ho Bae, Myeong-Kon Kim, Junghan Yoon, Seung-jung Park
Background: Outcomes remain relatively unfavorable for stent-based coronary intervention of lesions with long diseased segments.
Methods: This randomized, multicenter, prospective trial compared the Resolute zotarolimus-eluting stents (ZES) and sirolimus-eluting stents (SES) in 500 patients with long (≥25 mm) native coronary lesions. The primary end point of the trial was in-segment late luminal loss at 9 months angiographic follow-up.
Results: The ZES and SES groups had similar baseline characteristics. Lesion length was 32.4±13.5 mm in the ZES group and 31.0±13.5 mm in the SES group (P=0.27). Nine-month angiographic follow-up was performed in 70% of eligible patients. In-

segment late loss as the primary study end-point did not significantly differ among the ZES group and the SES group (0.14±0.38 mm vs. 0.12±0.43 mm, P for noninferiority=0.03, P for superiority=0.68). The rates of in-segment binary restenosis was 5.2% in the ZES group and 7.2% in the SES group (P=0.44). The in-stent late loss (0.26±0.36 mm vs. 0.24±0.42 mm, P=0.78) and in-stent binary restenosis rate (4.0% vs. 6.0%, P=0.41) were also similar among 2 groups. There were no significant between-group differences in the rate of adverse events (death, myocardial infarction, stent thrombosis, target-lesion revascularization, and composite outcomes).
Conclusion: For patients with long native coronary artery disease, as compared with SES implantation, the Resolute ZES showed similar angiographic late loss and restenosis rates. Clinical safety and efficacy outcomes were also similar between two stent groups.

Unprotected Left Main Stenting with Everolimus-Eluting Stent: PRECOMBAT-2 Study

Seung-jung Park, Young-Hak Kim, Duk-Woo Park, Soo-Jin Kang, Seung-Whan Lee, Cheol Whan Lee, Seong-Wook Park, Yangsoo Jang, Myung-Ho Jeong, Hyo-Soo Kim, Seung Ho Hur, Seung Un Na, Sung-Ho Her, Do-Sun Lim, Ki Bae Seung, In-Whan Seong, Jun-Hong Kim, Sang Gon Lee
Background: The PRECOMBAT randomized study showed a non-inferiority of percutaneous coronary intervention (PCI) with the first-generation sirolimus-eluting stent (SES) for unprotected left main coronary artery (ULMCA) stenosis compared with coronary artery bypass graft (CABG) surgery with regard to the incidence of 1-year major adverse cardiac or cerebrovascular events (MACCE) including death, myocardial infarction (MI), stroke or ischemia- driven target vessel revascularization (TVR). However, the safety and efficacy of the second-generation drug-eluting stent for such lesions are not known well.
Methods: The PRECOMBAT-2 study prospectively enrolled 397 consecutive patients who received PCI with everolimus-eluting stent (EES) for ULMCA stenosis. From this registry, the outcomes of 334 (84.1%) patients meeting the randomization criteria of the PRECOMBAT study were compared with those of patients randomized to SES (N=327) and CABG (N=272) in the PRECOMBAT study (Figure 1). The primary end point was the rate of MACCE over 2 years.
Results: Baseline clinical characteristics were well matched among the 3 groups. Angiographic follow-up was less frequently performed in the EES than in the SES group due to the less obligatory recommendation (60.8% vs. 76.1%, p<0.001). The MACCE rate over 2 years did not differ significantly among the 3 groups as shown in Figure 2 and Table. The 2-year incidences of composite of death, MI or stroke also did not differ among SES, EES and CABG groups. However, the incidence of ischemia-driven TVR was lower in the CABG than in the EES or SES groups. Between the EES and SES groups, the incidences of MACCE and any individual end points were not different over 2 years.
Conclusion: Stenting with the second-generation EES showed a similar efficacy for the treatment of ULMCA stenosis, as compared with stenting with the first-eneration SES or CABG, with regard to the incidence of MACCE over 2 years. Although there was a tendency of higher repeat revascularization rate after EES than CABG, the two stent types of EES or SES had comparable long-term safety and efficacy.

Outcomes Over 2 Years				
Outcomes	PRECOMBAT		PRECOMBAT2	p value
	SES (N=327)	CABG (N=272)	EES (N=334)	
Death	2.2%	3.3%	1.8%	0.67
MI	1.2%	1.5%	1.2%	0.95
Stroke	0.3%	0.4%	0.6%	0.87
Ischemia-driven TVR	9.2%	3.4%	7.2%	0.023
Death, MI, Stroke	3.7%	4.8%	3.0%	0.70

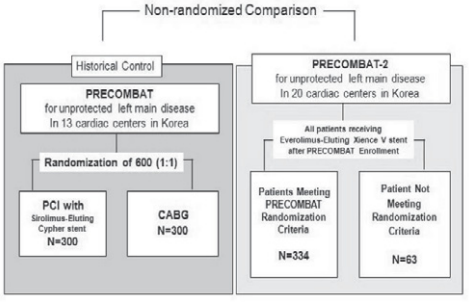
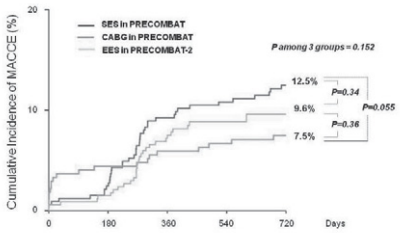


Figure 1. Study Design

Figure 2. Incidence of MACCE Over 2 Years



Drug Eluting Balloon Releasing Paclitaxel for Treatment of Coronary Restenosis in Bare Metal- and Drug Eluting Stents: Twelve-Month Follow-Up Results from the European PEPPER FIM Trial

Christoph Hehrlein, Ulrich Dietz, Jacek Kubica, Erik Jorgensen, Ellen Hoffmann, Christoph Naber, Maciej Lesiak, Henrik Schneider, Marcus Wiemer, Gert Richardt
Background: In-stent restenosis continues to be a therapeutic challenge. The present study aimed to evaluate safety and efficacy of a drug eluting balloon (DEB) releasing paclitaxel from a butyryl-tri-hexyl citrate (BTHC) excipient in patients with a single in-stent restenotic lesion (ISR) in coronary arteries.
Methods: Between August 2009 and April 2010, 81 patients were pre-dilated with an uncoated balloon and treated with the Pantera Lux Paclitaxel Releasing Balloon at 9 European sites. Dual antiplatelet therapy (DAPT) was recommended for 3 months. Clinical follow up was performed at 1, 6 and 12 months, and angiographic follow up at 6 months. The primary endpoint was in-stent late lumen loss at 6 months. A secondary endpoint was major adverse cardiac event (MACE, a composite of cardiac death, non-fatal MI, clinically driven target lesion revascularization (TLR) and clinically driven target vessel revascularization (TVR)) rate at 1, 6 and 12 months.
Results: The majority of restenotic lesions from bare metal 43 (53%) and drug eluting stents 38 (47%) were core lab classified to Mehran class I (71.6% focal) followed by class II (19.8% diffuse intra-stent). Device success rate was
98.6%. At 6 months, in-stent late lumen loss was 0.07 ± 0.31 mm and MACE rate was 7.8% (1 peri-procedural MI, 1 TVR and 4 TLR). The preliminary MACE rate at 12 months was 11.7% and was driven by 3 additional TLR.
Conclusion: Twelve-month preliminary MACE results confirmed safety and efficacy in a mixed population of BMS-ISR and DES-ISR patients for a novel drug eluting balloon releasing paclitaxel from the excipient BTHC.

Early Healing of Coronary Stents. Comparative Optical Coherence Tomography Study. Comparison of the entothelial progenitor cell capturing stent (GENOUS) with chromium cobalt BLAZER and SOLARFLEX stents and drug-eluting NOBORI stent.

Ladislav Groch, Anna Kilianova, Ota Hlinomaz, Michal Rezek, Jan Sitar
Background: Most powerful predictor of stent thrombosis is endothelial coverage. Optical Coherence Tomography (OCT) is due to resolution 10um excelent tool to assess stent healing.
Methods: In our prospective, single centre, randomized study we compared early (14 days) healing in 40 patients treated for stable/unstable angina or non-sustained myocardial infarction by percutaneous coronary intervention with stent implantation. 40 patient/44stents were randomized into four groups: 10 patients treated by entothelial progenitor cell capturing stent (GENOUS chromium cobalt stent), 10 pts by Blazer stent (chromium cobalt stent), 10 pts by SolarFlex (chromium cobalt stent) and 10pts by NOBORI stent (biolimus eluting coronary stainless steel stent). The standard technique of stent implantation – baloon/artery ratio 1:1 and 16 bars implantation pressure – was used. 14 days after successful stent implantation OCT evaluation was performed. Stent coverage was divided into 3 categories: malapposed, apposed-uncovered and covered class. The primary endpoint was the percentage of healing struts, the secondary endpoints were the absolute thickness of neointima and the percentage of malapposed struts.Total 4413 struts of stents were manually analyzed.
Results: Results are shown in Table No 1, 2 3 and graph No 1.
The most rapid and the most massive healing was observed in GENOUS stents. Also the absolut thickness of neointima was the highest in GENOUS stent.
Conclusion: The entothelial progenitor cell capturing GENOUS stent provides the more rapid healing compared with chromium cobalt stents and drug-eluting stent.The early healing is the powerfull predictor of subacute and late stent thrombosis. Thus, the high percentage of covered strus probably enable to minimalize the lenght of dual antiplatelet therapy, especially in patients with encreased bleeding risk. If our results can be transfered into clinical praxis must be proven in further studies.

Graph No 1. COVERAGE + MALAPPOSITION OF STRUTS

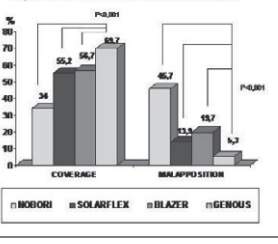


TABLE No 1:HEALED AND MALAPOSSED STRUTS

	Total struts	Healed struts(No / %)	Malapposed struts (No / %)
GENOUS	919	641 / 69,7	49 / 5,3
BLAZER	524	297 / 56,7	103 / 19,7
NOBORI	1063	361 / 34,0	486 / 45,7
SOLARFLEX	1536	848 / 55,2	214 / 13,9